

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



547197



(43) International Publication Date  
16 September 2004 (16.09.2004)

PCT

(10) International Publication Number  
WO 2004/079762 A2

(51) International Patent Classification<sup>7</sup>:

H01J

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(21) International Application Number:

PCT/IB2004/000549

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(22) International Filing Date: 20 February 2004 (20.02.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/451,557

3 March 2003 (03.03.2003) US

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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

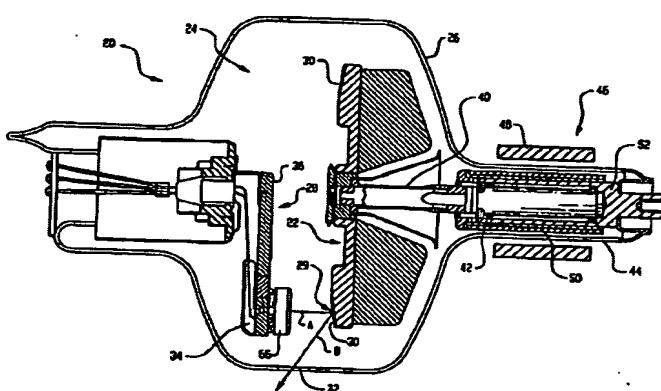
Published:

— without international search report and to be republished upon receipt of that report

*[Continued on next page]*

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(54) Title: X-RAY TUBE CATHODE ASSEMBLY AND INTERFACE REACTION JOINING PROCESS



WO 2004/079762 A2

(57) **Abstract:** An x-ray tube cathode assembly (28) includes a support arm (36) comprising a first metal. A ceramic insulator (70, 82) has a first metalized surface (72, 86) wherein the metalized surfaces comprise a desired amount of the first metal. A first member of filler material (90) is in contact with the support arm (36) and the first metalized surface (72, 86) of the ceramic insulator (70, 82), the first member of filler material comprising at least a second metal (96a, 96b) wherein a first alloy system (Fig. 5) comprising the first and second metals includes an alloy minimum point percentage composition (P) of the first and second metals having a first alloy system minimum melting point (M) for the alloy minimum point percentage composition that is lower than both of the melting point of the first metal and second metal. A bonding region resulting from heating the cathode assembly causing diffusion bonding to proceed, the bonding region has a layer of alloy comprising the minimum point percentage composition (P) and the heating of the cathode assembly continues to a bonding temperature of at least the first alloy system minimum melting point (M) and holding at that temperature for a desired period of time.